Excel Expert

Session 3 – Advanced Formulas

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IfError –

The IFERROR function in Excel is designed to trap and manage errors in formulas and calculations. More specifically, IFERROR checks a formula, and if it evaluates to an error, returns another value you specify; otherwise, returns the result of the formula.

Use the IfError Function to make sure if there is an division by zero – it doesn't show an error.

=IFERROR((([@Retail]-[@Cost])/[@Cost]),"Pure Profit")

SUMIFS

SUMIFS is a function to sum cells that meet multiple criteria. SUMIFS can be used to sum values when adjacent cells meet criteria based on dates, numbers, and text. SUMIFS supports logical operators (>,<,<>,=) and wildcards (*,?) for partial matching.

=SUMIFS (sum_range, range1, criteria1, [range2], [criteria2], ...)

AVERAGEIFS

AVERAGEIFS is a function to sum cells that meet multiple criteria. AVERAGEIFS can be used to sum values when adjacent cells meet criteria based on dates, numbers, and text. AVERAGEIFS supports logical operators (>,<,<>,=) and wildcards (*,?) for partial matching.

= AVERAGEIFS (sum_range, range1, criteria1, [range2], [criteria2], ...)

COUNTIFS

COUNTIFS is a function to sum cells that meet multiple criteria. COUNTIFS can be used to sum values when adjacent cells meet criteria based on dates, numbers, and text. COUNTIFS supports logical operators (>,<,<>,=) and wildcards (*,?) for partial matching.

= COUNTIFS (sum_range, range1, criteria1, [range2], [criteria2], ...)

VLOOKUP

VLOOKUP is an Excel function to lookup and retrieve data from a specific column in table. VLOOKUP supports approximate and exact matching, and wildcards (* ?) for partial matches. The "V" stands for "vertical". Lookup values must appear in the first column of the table, with lookup columns to the right.

=VLOOKUP (value, table, col_index, [range_lookup])

MATCH

The MATCH function looks through a row or column of cells for a value. If MATCH finds that value, it returns the relative position of the match in the row or column. Here's the syntax:
MATCH(lookup_value, lookup_array[, match_type])

Argument	Description
lookup_value	The value you want to find. You can use a number, string, reference, or logical value.
lookup_array	The row or column of cells you want to use for the lookup.
match_type	How you want Excel to match the lookup_value with the entries in the lookup_array. You have three choices: • 0 finds the first value that exactly matches lookup_value. The lookup_array can be in any order. • 1 finds the largest value that is less than or equal to lookup_value (this is the default value). The lookup_array must be in ascending order. • -1 finds the smallest value that is greater than or equal to lookup_ value. The lookup_array must be in descending order.

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Normally, you don't use the MATCH function by itself; you combine it with the INDEX function. INDEX returns the value of a cell at the intersection of a row and column inside a reference. Here's the syntax for INDEX: INDEX(reference, row_num[, column_num][, area_num]) The following table describes the INDEX function arguments.

Argument	Description
reference	A reference to one or more cell ranges.
row_num	The number of the row in reference from which to return a value.
column_num	The number of the column in reference from which to return a value. You can omit column_num if reference is a single column.
area_num	If you entered more than one range for reference, area_num is the range you want to use. The first range you entered is 1 (this is the default), the second is 2, and so on.

The idea is that you use MATCH to get row_num and/or column_num (depending on how your table is laid out) and then use INDEX to return the value you need. For example, consider a worksheet that uses a MATCH and INDEX formula in cell B2 to take the account number entered into cell B1, locate the

match in the range H6:H13, and return the quantity from the range C6:C13. The formula would look like this: =INDEX(C6:C13, MATCH(B1, H6:H13, 0)).

AND

The Excel AND function is a logical function used to require more than one condition at the same time. AND returns either TRUE or FALSE. To test if a number in A1 is greater than zero and less than 10, use =AND(A1>0,A1<10). The AND function can be used as the logical test inside the IF function to avoid extra nested IFs, and can be combined with the OR function.

=AND (logical1, [logical2], ...)

OR

The OR function is a logical function to test multiple conditions at the same time. OR returns either TRUE or FALSE. For example, to test A1 for either "x" or "y", use =OR(A1="x",A1="y"). The OR function can be used as the logical test inside the IF function to avoid extra nested IFs, and can be combined with the AND function.

=OR (logical1, [logical2], ...)

NOT

In Excel, you return the opposite of a logical expression by using the NOT function. If logical is TRUE (or any nonzero number), NOT returns FALSE. If logical is FALSE (or 0), NOT returns TRUE.

=NOT (logical)

Goal Seek

Technically, Goal Seek is a process of calculating a value by performing what-if analysis on a given set of values. For our purposes, Excel's Goal Seek feature lets you adjust a value used in a formula to achieve a specific goal. Or, put another way, Goal Seek determines input values needed to achieve a specific goal. Use Goal Seek when you don't have an exact value to use.

Debugging

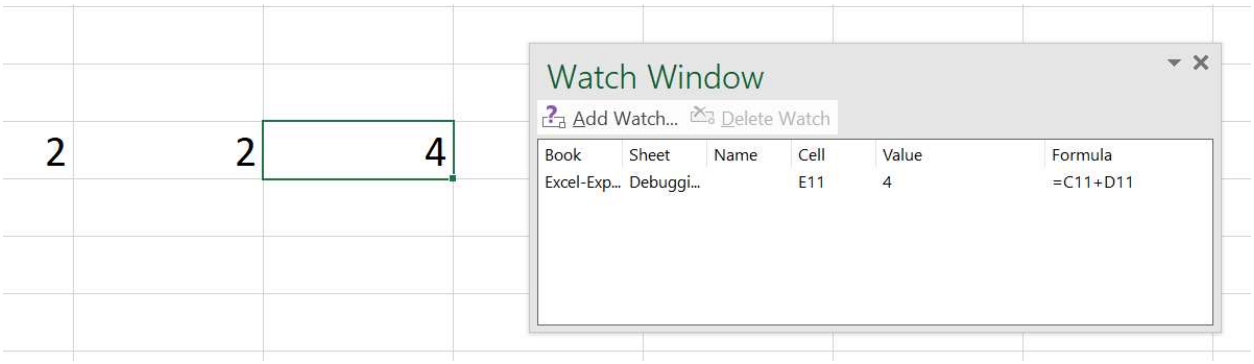
Trace Precendents – Where do you get this number?

Trace Dependents – Who depends on this number?

Watch Window

It is very common for a formula to refer to a precedent that resides in a different worksheet. That's a powerful technique, but it does mean that you might not be able to see the formula cell and the precedent cell at the same time. This could also happen if the precedent exists in another workbook or even elsewhere on the same sheet, if you're working with a large model.

This is a problem because there's no easy way to determine the current value or formula of the unseen precedent. If you're having a problem, troubleshooting requires that you track down the far-off precedent to see if it might be the culprit. That's bad enough with a single unseen cell, but what if your formula refers to 5 or 10 such cells? And what if those cells are scattered in different worksheets and workbooks? This level of hassle—not at all uncommon in the spreadsheet world—was no doubt the inspiration behind an elegant solution: the Watch Window. You use this window to keep track of both the value and the formula in any cell in any worksheet in any open workbook.



To remove a watch

1. On the Formulas tab, in the Formula Auditing group, click Watch Window to open the Watch Window.
2. Click the watch you want to remove.
3. Click Delete Watch. Excel removes the watch.

Grouping and Ungrouping

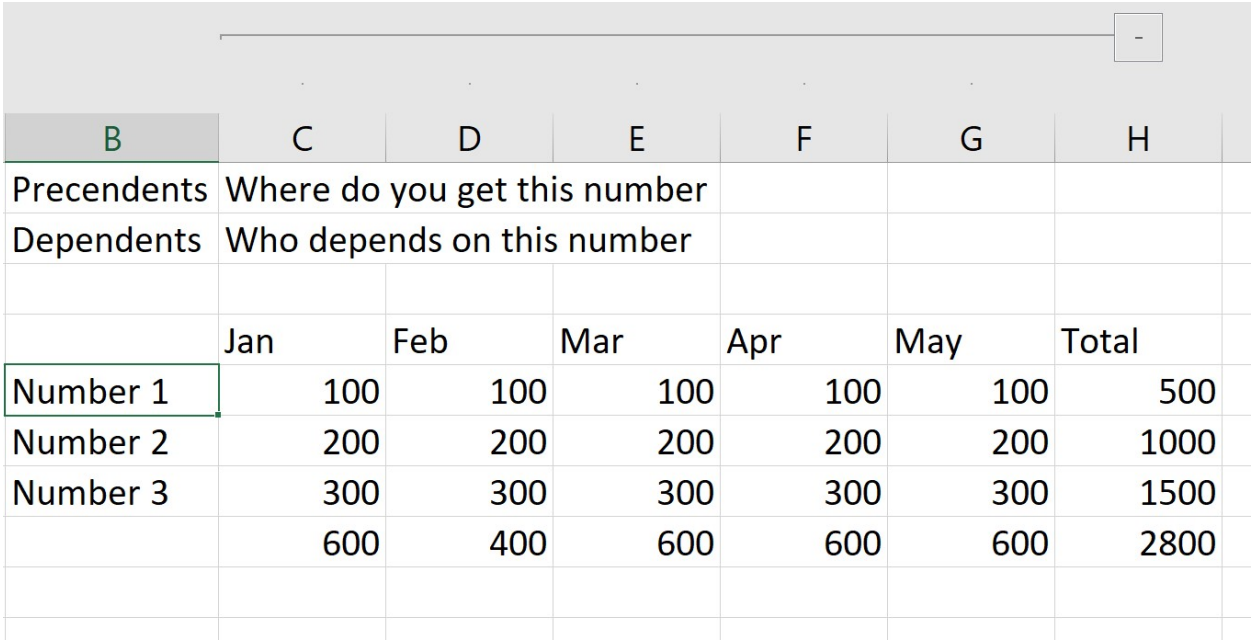
Spreadsheets often have different levels of data. And those levels can be difficult to parse when you're trying to read them.

That's where grouping and outlining comes in.

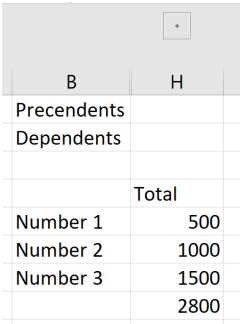
Grouping cells can make your data easier to read, and it can even help you automate some addition within the outline.

- Select the cells to hide
- Select Group under Data

B	C	D	E	F	G	H
Precendents	Where do you get this number					
Dependents	Who depends on this number					
	Jan	Feb	Mar	Apr	May	Total
Number 1	100	100	100	100	100	500
Number 2	200	200	200	200	200	1000
Number 3	300	300	300	300	300	1500
	600	400	600	600	600	2800



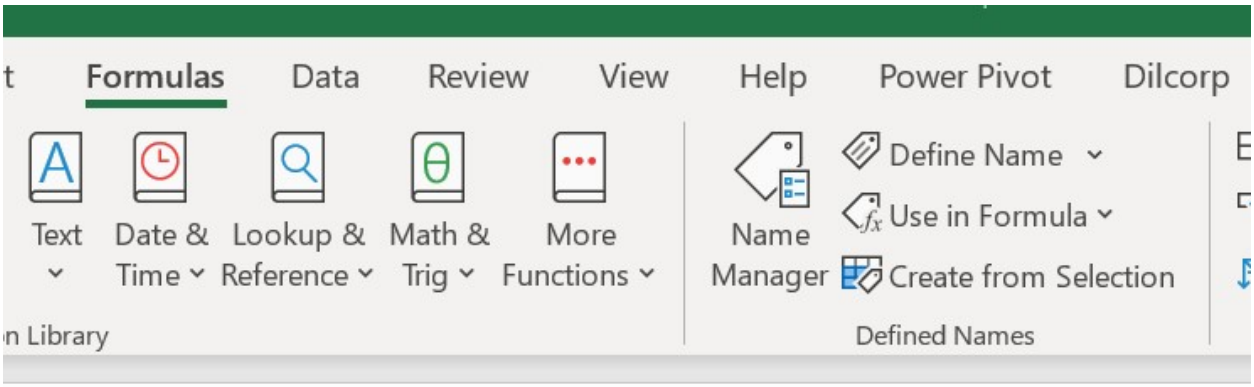
B	C	D	E	F	G	H
Precendents	Where do you get this number					
Dependents	Who depends on this number					
	Jan	Feb	Mar	Apr	May	Total
Number 1	100	100	100	100	100	500
Number 2	200	200	200	200	200	1000
Number 3	300	300	300	300	300	1500
	600	400	600	600	600	2800



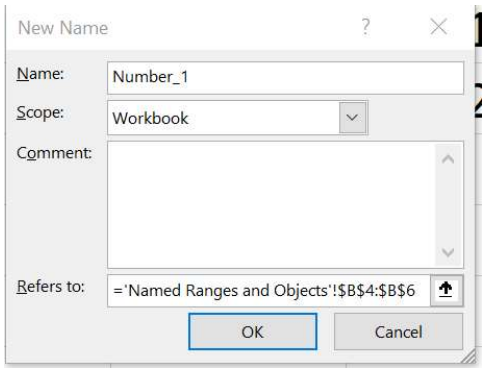
B	H
Precendents	
Dependents	
	Total
Number 1	500
Number 2	1000
Number 3	1500
	2800

Named Ranges and Objects

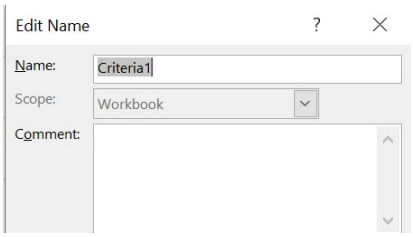
Excel comes with a Name Manager feature, which is a useful interface for working with range or object names. You can use the Name Manager to change a name, edit a range name's coordinates, or to delete a name.

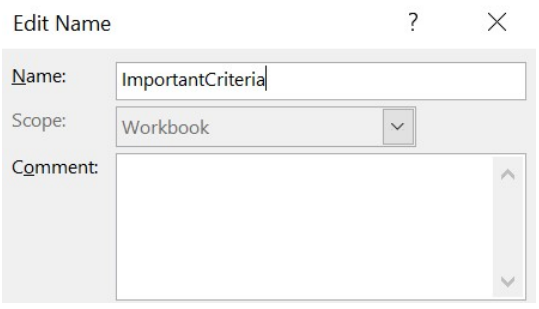


We've been using the Name box to add additional information about the named location. But, when using the "Define Name" button – you can also define scope and comment on what the range is about.



Using the manager – you can change the name of the range if it was misspelled or the scope has changed.



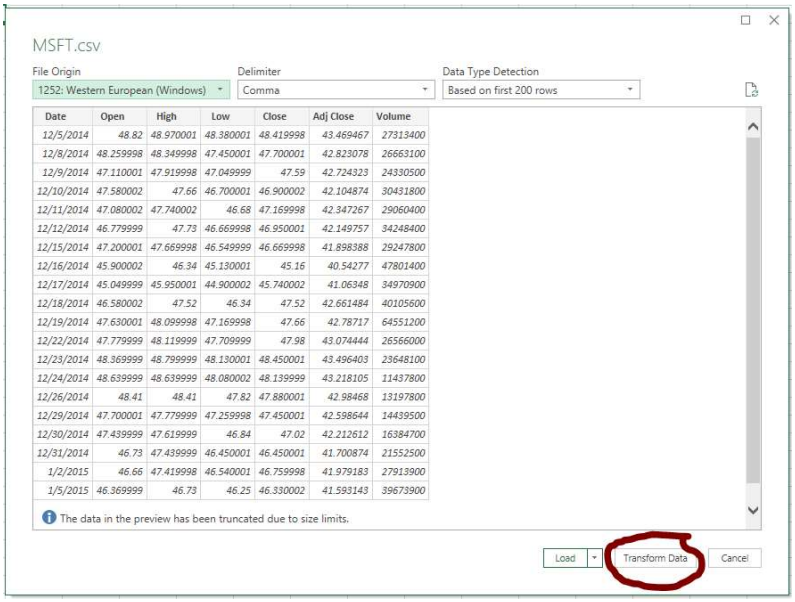


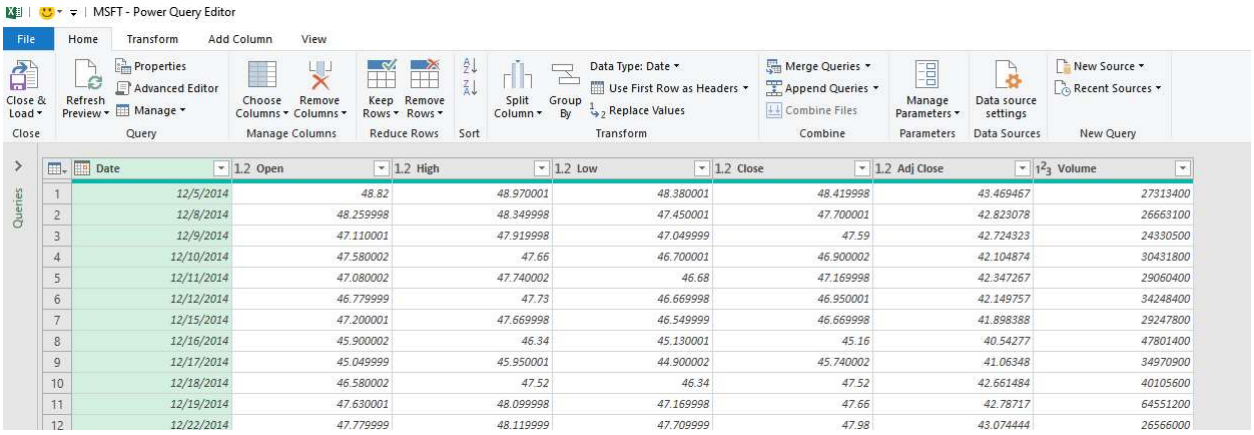
Importing Data

Go to finance.yahoo.com and download 5 years' worth of stock information from Microsoft (MSFT). When downloaded, you can double-click on the file and it automatically gets loaded into Excel.

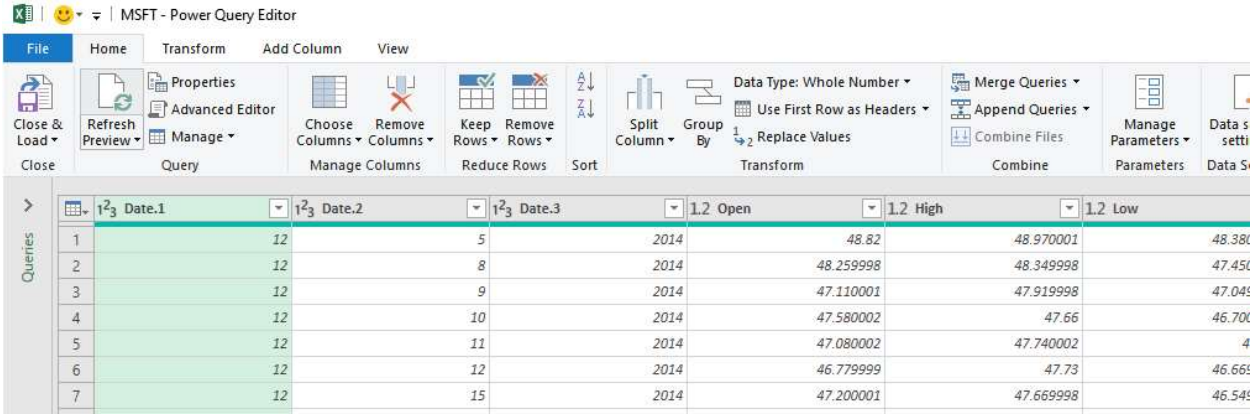
Great.

But, we can use open it via the Data tab-> in the Get & Transform group, click New Query, point to the type of data you want to import, and then in the submenu, click the data source type. This now allows us to make transformations on the data before bringing it into our spreadsheet.

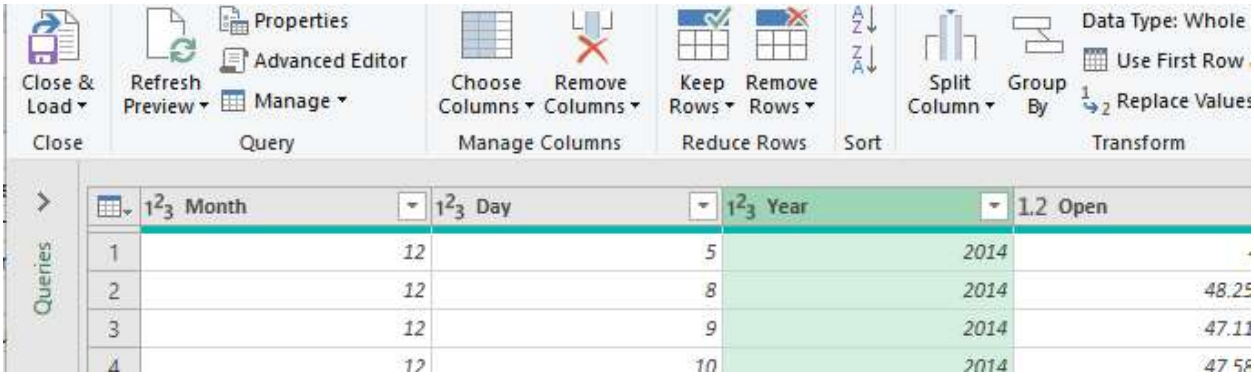




You can also split columns by using the column splitter. So, you can split the date by the /.



You can also rename the columns before importing them.



If you did something you don't want to do – you can remove it from the Applied Steps